

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (previously presented): A method for the purification of plasmid DNA in an aqueous two-phase system, comprising:

- (a) providing a composition including a first polymer that exhibits inverse solubility characteristics, a second polymer that is immiscible in the first polymer and, optionally, a salt;
- (b) contacting said composition with an aqueous solution comprising plasmid DNA;
- (c) providing a phase separation and subsequently isolating the aqueous phase;
- (d) increasing the temperature of the isolated aqueous phase to a temperature above the cloud point of the first polymer and below a temperature where plasmid DNA is degraded and subsequently isolating the aqueous phase so formed; and, optionally,
- (e) performing a chromatography step to recover the plasmid DNA from the isolated top phase.

Claim 2 (previously presented): The method of claim 1, wherein the first polymer has a cloud point below about 60<sup>0</sup>C in the aqueous solution.

Claim 3 (previously presented): The method of claim 1, wherein the first polymer is selected from the group consisting of polyalkylene glycols, poly(oxyalkylene)polymers, poly(oxyalkylene)copolymers, polyvinyl pyrrolidone, polyvinyl alcohol, polyvinyl caprolactam, polyvinyl methylether, alkoxyated surfactants, alkoxyated starches, alkoxyated cellulose, alkyl hydroxyalkyl cellulose, silicone-modified polyethers, poly N-isopropylacrylamide and copolymers thereof.

Claim 4 (previously presented): The method of claim 1, wherein the first polymer is a copolymer including ethylene oxide and propylene oxide.

Claim 5 (previously presented): The method of claim 1, wherein the second polymer is selected from the group consisting of hydroxyalkyl cellulose, hydroxyalkyl starches, starch, dextran, and pullulan.

Claim 6 (previously presented): The method of claim 1, wherein the weight ratio of the amounts of first polymer:second polymer is about 1:1.

Claim 7 (previously presented): The method of claim 6, wherein the amount of the first polymer is about 4.5% (w/w) and the amount of the second polymer is about 4.5% (w/w) of the composition provided in step (a).

Claim 8 (previously presented): The method of claim 1, wherein the aqueous solution that includes plasmid DNA is a cell lysate, and wherein said method further comprises a step for desalting the cell lysate before step (b).

Claim 9 (previously presented): The method of claim 1, wherein the contacting according to step (b) involves mixing at room temperature.

Claim 10 (previously presented): The method of claim 1, wherein the isolation according to step (c) and/or step (d) is by centrifugation.

Claim 11 (withdrawn): A composition for extraction of plasmid DNA in an aqueous two-phase system, which composition comprises a first polymer that exhibits inverse solubility characteristics at temperatures below about 60°C, a second polymer that is immiscible in the first polymer and optionally a salt.

Claim 12 (withdrawn): The composition of claim 11, wherein the amount of the first polymer is 4.5% (w/w) and the amount of the second polymer is 4.5% (w/w).

Claim 13 (cancelled)

Claim 14 (withdrawn): A kit for purification of plasmid DNA from a cell lysate in an aqueous two-phase system, which kit comprises a first polymer that exhibits inverse solubility characteristics at temperatures below about 60<sup>0</sup>C, a second polymer that is immiscible in the first polymer and optionally a salt in one compartment as well as written instructions for the use thereof.

Claim 15 (withdrawn): The kit of claim 14, wherein the first polymer is comprised of ethylene oxide and propylene oxide.

Claim 16 (withdrawn): The kit of claim 14, wherein the second polymer is selected from the group consisting of hydroxyalkyl cellulose, hydroxyalkyl starches, starch, dextran, and pullulan.

Claim 17 (withdrawn): The kit of claim 14, wherein the weight ratio of the amounts of first polymer:second polymer is about 1:1.

Claim 18 (withdrawn): The kit of claim 14, which is for purification of a cell lysate that has been desalted before being mixed with an aqueous solution that comprises plasmid DNA.

Claim 19 (cancelled)

Claim 20 (previously presented): The use of a polymer that exhibits inverse solubility characteristics at temperatures below about 60<sup>0</sup>C in an aqueous two-phase system for the purification of plasmid DNA from a cell lysate.

Claim 21 (previously presented): The use of claim 20, wherein the polymer is a copolymer of ethylene oxide and propylene oxide.

Claim 22 (previously presented): The method of claim 4, wherein the copolymer includes about 50% propylene oxide and about 50% ethylene oxide.